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" Salvation of India lies in Cottages."

—*MAHATMA GANDHI*

PROBLEMS OF EFFICIENCY, COORDINATION AND PUBLIC CO-OPERATION.

SHRI Jayachandran of Vidyabharati, Madras, has addressed a letter to Shri Mahesh Chand after reading his article entitled "We Too Have A Target" appeared in the October issue of Rural India. The letter is also intended for public use since it points out some of the serious gaps of Efficiency, Coordination and public Co-operation found in the working of our plans. We publish the letter for the benifit of our readers :

"It was with deep interest, I read your article in Rural India for Oct. 56. Equally, it was painful to learn some of the bitterest things happening around us. By closing our eyes we can't refuse the facts. The facts remain as they are, but we become the fools.

"Your observations regarding the 'efficiency' of our Planners and civil servants are mostly true and about which most of us may readily agree with. There has been no effort, on the part of Government, to coordinate the different forces that are being set to work in accomplishing the details of our plan : this is really a sad plight in a democracy which is planning for its prosperity.

"You say, "There is a drastic need for the urge to compete with the private sector in regard to efficiency". I agree. While the private sector is prepared to take almost every risk and to make necessary sacrifices, the public enterprise is not prepared to assume even the necessary risks and to make even legitimate sacrifices. Unless the interests of the public are clearly associated with needful efficiency, I fear, any further extension of public sector will put the country's progress in jeopardy.

"Mr. Nanda has the right to judge the performance of public co-operation in the implementation of any of the governmental policies. But the public, on their part, have equally the right to expect that this judgement be impartial, objective and based on the evidence on record. What we need today is a three party co-operation—between the public themeselves and between the government and the public. It needs no stressing that public co-operation has its sphere restricted to that which planners indicate or allow. It is upto the planners to enlarge this sphere and provide incentives to accelerate the phase of the functions of public co-operation and it is up to the government to see that this is properly achieved.

"Public co-operation is not a magic word. It works only when it is properly evoked. It is rather like a magnate. The government which we may call a piece of iron, must be kept in proximity to the public, in order the magnate may catch the iron. Evidently the distance between the individual citizen and those who plan for the supply of his needs, should be minimised as far as possible. Whether public co-operation will get this much needed respite, to enable it to give the best it can, is highly problematic in the present mood of the government and in the callous indifferent attitude of a larger section of our civil heirarchy in their relations to the common-man. Is it not like tying up a man in knots and blaming him for not sprinting ?"

The three problems of efficiency, co-ordination among government departments and public co-operation in the execution of developmental plans touched by Shri Jayachandran in the course of his letter have been dealt with in these columns more than once. But our leaders in government, who could set things right and create a favourable climate for effective working of plans, probably look at these plans from a

different angle than what people like us and Shri Jayachandran do. It seems, the leaders' way of looking at things is coloured by political and party considerations and they seem to be more concerned with propaganda and publicity than actual and practical results of the plan itself. And in their present mood they do not feel much bothered as to how others feel and talk about these developmental measures.

TWO HANDS AND A WILL

By: **F. O. CONSER**

NEARLY everyone of us has two hands. Too few of us have the will to use them. This is a plea for Men and not Machinery. It is the plea for Jivandan and not for Dam (money). Our tools are our hands and our Will is our finest gold.

India is 8,000 miles away and yet it is ever with me. I am glad to have it so. It is very dear to me. It is in my heart, and thot and speech. The people listen readily. India has a real place in the affections of Americans. They want to know and they want to help. Money and machinery made the modern America. That is what they want to offer me. I refuse and they are disturbed. The need is great and they are puzzled because I turn down the offer of a Tractor.

I want to do so much for India in the closing years of service to my adopted Motherland. A Tractor could help a lot. It is a real temptation to take one back. 'Two Hands and A Will' can do a lot more. There is no costly import duty. They are available on the spot. Shankarrao Kirloskar once told me that there were 720,000,000 of them. Best of all, there is a Will. Machines lack that. But men and women, boys and girls have it. There is self-reliance in India. They know that the 'IMPOSSIBLE' can be done. It just takes a little longer, but they have the patience for the task.

I would be doing India and this great army of Volunteers a distinct disservice if I placed more value on a Machine than upon personality. I want to build India, but above all I want to build *character*. I do not deny character to a good machine. The stamp of worth can be on steel as well as on spirit. But let us develop our own mettle before we go in for too much metal. I can marvel at a great Earth-mover. But I claim that I have witnessed a far greater sight when I've witnessed in Kupwad and Soni, an army of school boys form contour bunds with equal speed. The Giant Machine did not swell with pride. It wasted and rusted away. But with every task the children grew. Muscles were stronger and wills were determined.

They were changing the face of India. They were building the Nation and becoming its resolute citizens. Those 2 hands were united with many hands, but the will was always one. It was a glorious adventure far above the price of filthy lucre. India does not have enuf money—nor America either for that matter—to do all that must be done to make it the land of our dreams. Let us admit that we are poor. Let us stand erect in the strength of a mighty resource—Our Man Power. Let us harness this Manpower and see our difficulties and our impossibilities vanish. It won't happen overnight, but it will be the leaven that will renew the Nation and transform our characters. Work will become a sacrament and man will claim kinship with his Creator.

'Two hands and a Will' are integral to the Basic Education Program. The place to start is in the Schools, even at the Primary level. The lower Primary need not be ruled out. Least of all should they be discouraged when they catch the vision of what the older boys are doing. The teachers should be strong exponents, in word and *deed*, of the theory. Parents may call it 'nonsense' but the children will not be so easily discouraged. Sooner or later the parents come into active and helpful participation. Girls and women have played a worthy part in our Projects in Kupwad, Soni and Dandaba. Women will play an increasingly active part in the building of the nation.

Every village School should have its Forest, its Farm and its garden with fruits, vegetables and flowers. The Pasture Land could be renovated and made the basis of a worthy herd of cattle. The Village Tank could be cleaned, plugged and tree-lined. Where there is Forest Land-much is treeless, it could be contoured and afforested. Governmnet has made provision for the fencing. A 'LIVE FENCE' is easily and wisely planted. Trees must be planted in ever increasing volume and every road should enjoy pleasant shade.

I fear that there has been a tendency on the part of many guests, mostly Americans, to exaggerate our achievements. Upto a certain point it is praiseworthy, but we would make more progress if they would lovingly and patiently show us our faults. They did find much more than they expected and we can rejoice in that. They were grateful for warm-hearted hospitality, but their praise was an unkindness unless tempered with a critical attitude.

The core of this article was in my mind before leaving India. It is basic to my village uplift efforts. I was about to entitle it, "A Helping Hand for a Hapless Land". It would be fair and it would hold much of truth, but it might hurt. I would not willingly wound. My sole purpose is to heal and to help. But we have to realize that the patient is pretty sick. Political freedom has not yet won us Economic Freedom. Nor can it win us that freedom with thousands of acres in thraldom. Our economic democracy is fancy unless it gives us more of food and comfort.

Foreign Aid will diminish. That is the mood in America. I am sad with you and yet I am glad for you. We shall stand on our own two feet and we shall work with our own two hands and with a holy will we shall redeem our nation out of bondage.

At this stage in our Nation's life machinery is not the answer. I am inclined to think that money is not the answer. I am almost certain that Foreign money is not the answer. I want to assure you that it is not tainted and it is not a bribe. I fear that it could be a drag on our self reliance. Our will to win is when we use our *little* to our *utmost*.

TRADE UNIONISM IN GANDHIAN ECONOMIC THOUGHT

By : **S. N. JHA**

A TRADE union is an organisation of the labourers formed with the object of improving the conditions of employment. The main principle behind trade unions is that in union lies strength and thereby balancing the comparative strength of the employees and the employers in order to better the lot of employees.

The main difference between the prevailing and Gandhian principles is that whereas an antagonism between the interests of the employer and the employees is recognised Gandhi did not recognise it, "Class war is foreign to the essential genius of India, which is capable of evolving communism on the fundamental rights of all on

equal justice. Ramarajya of my dream ensures rights alike of prince and pauper". "Socialism and communism of the west are based on certain conceptions which are fundamentally different from ours. One such conception is their belief in essential selfishness of human nature. I do not subscribe to it for I know that the essential difference between man and the brute is that the former can respond to the call of the spirit in him, can rise superior to the passions that he owns in common with the brute and, therefore, superior to selfishness and violence, which belong to the brute nature and not to the immortal spirit of man......Our socialism or communism should, therefore, be based on non-violence and on harmonious co-operation of labour and capital, landlord and tenant."

If people give up selfish motive and adopt service motive and co-operate for their common good there will be no room for exploitation and it will be found that there is really no antagonism between classes, "I do not believe that the capitalists and the landlords are all exploiters by an inherent necessity, or that there is a basic or irreconcilable antagonism between their interests and those of the masses. All exploitation is based on co-operation, willing or forced, of the exploited. However much we may detest admitting it, the fact remains that there would be no exploitation if people refuse to obey the exploiter. But self comes in and we hug the chains that bind us. This must cease. What is needed is not the extinction of landlords and capitalists, but a transformation of the existing relationship between them and the masses into something healthier and purer." Gandhi admitted that there will be class division but it will be horizontal and not vertical as is today, if the social structure is based on service motive instead of selfish motive, "The rich can help the poor by using their riches not for selfish pleasure, but so as to subserve the interests of the poor. If they do so, there will not be that unbridgeable gulf that today exists between the haves and the have-nots. Class divisions there will be, but they will then be horizontal, not vertical."

Because of ignorance and communal and class feelings labour wants to kill or destroy the capitalist, otherwise labour is superior to capital and in close co-operation it can work wonders. One of the causes of capital controlling labour is knowing the art of combination by the former and therefore Gandhi wanted the labour also to combine with service motive and then capitalists would exist only as trustees, 'There was no distinction between the Hindus and the Muslims in labour. They were all labourers. If the communal canker entered the labour ranks, both will weaken labour and therefore themselves and the country. Labour was a great leveller of all distinctions. If they realized that truth, he would like them to go a step further. Labour, because it chose to remain unintelligent, either became subservient or insolently believed in damaging capitalist's goods and machinery or even in killing capitalists. He was a labourer by conviction and a bhangi. As such his interests were bound with those of labour. As such he wished to tell them that violence would never save them. They would be killing the goose that laid golden eggs. What he had been saying for years was that labour was far superior to capital. Without labour gold, silver and copper were a useless burden. It was labour which extracted precious ore from the bowels of the earth. He could quite conceive labour existing without metal. Labour was priceless, not gold. He wanted marriage between capital and labour. They could work wonders in co-operation. But that could happen only when labour was intelligent enough to co-operate with itself and then offer co-operation with capital on terms of honourable equality.

Capital controlled labour because it knew the art of combination. Drops in separation could only fade away ; drops in cooperation made the ocean which carried on its broad bosom ocean greyhounds. Similarly, if all the labourers in any part of the world combined together they could not be tempted by higher wages or helplessly allow themselves to be attracted for, say, a pittance. A true and non-violent combination of labour would act like a magnet attracting to it all the needed capital. Capitalists would then exist only as trustees. When that happy day dawned, there would be no difference between capital and labour. Then labour will have ample food, good and sanitary dwellings, all the necessary education for their children, ample leisure for self-education and proper medical assistance.'

On these basic principles Ahmedabad Labour Union was organised at the instance of Gandhiji which has done admirable work, "Ahmedabad Labour Union is a model for all India to copy. Its basis is non-violence, pure and simple. It has never had a set-back in its career. It has gone on from strength to strength without fuss and without show. It has its hospital, its schools for the children of the mill-hands, its classes for adults, its own printing press and khadi depot, and its own residential quarters. Almost all the hands are voters and decide the fate of elections. They came on the voter's list at the instance of the Provincial Congress Committee. The organisation has never taken part in party politics of the Congress. It influences the municipal policy of the city. It has to its credit very successful strikes which were wholly non-violent. Mill owners and labour have governed their relations largely through voluntary arbitration. If I had my way, I would regulate all the labour organizations of India after the Ahmedabad model. It has never sought to intrude itself upon the All-India Trade Union Congress and has been uninfluenced by the Congress. A time, I hope, will come when it will be possible for the Trade Union Congress to accept the Ahmedabad method and have the Ahmedabad Organization as part of the All-India Union. But I am in no hurry. It will come in its own time".

The problem of labour is so important that Gandhi included it under his 'Constructive Programme' in which he has outlined the course of action a labour union should stand for, "Closely allied to the Kisan work is 'labour'. Here labour means industrial labour and therefore, concentrated and centralized and much more limited in scope. Moreover, it lends itself readily to political handling.

Being necessarily confined to cities it attracts workers more easily than kisan work. As part of constructive programme its primary aim is elevation of labour to its deserved status. Therefore, a labour worker's aim should be to raise the moral and intellectual height of labour and thus by sheer merit to take him or her capable not merely of bettering his or her material condition but making labour master of the means of production instead of being the slave that it is. Capital should be labour's servant, not its master. Labour should be made conscious of its duty from whose performance rights' follow as a matter of course. In a concrete form :

(a) Labour should have its own unions.

(b) Education both general and scientific, of both men and women, should be regularly undertaken through night schools.

(c) Children of labourers should be educated after the basic education style.

(d) There should be a hospital, a creche and a maternity home attached to every centre.

(e) Labour should be able to support itself during strikes (Labour should be taught the science of conducting a successful non-vielent strike).

All the work I have mentioned could be done only through unions mentioned in (a)."

Although not satisfied in its entirety Gandhi regarded Ahmedabad Union referred to above as a model, "To my knowledge the Ahmedabad Union is the best managed union. This does not mean that it has reached my ideal. It is trying so. If all the unions worked in the same direction, the lot of labour would be infinitely better than it is today. Labour united and morally and intellectually trained would anyday be superior to capital."

Trade unions in India are at present controlled not by the labourers themselves but by outside leadership. This is a defect of the trade union movement, and can only be remedied by the spread of education among the workers, "One word about policy. It is not anti-capitalistic. The idea is to take from capital labour's due share and no more, and this not by paralyzing capital, but by reform among labourers from within and by their own self-consciousness; not again through the cleverness and manoeuvring of non-labour leaders, but by educating labour to evolve its own leadership and its own self-reliant, self-existing organization. Its direct aim is not in the least degree political. Its direct aim is internal reform and evolution of internal strength. The direct result of this evolution when and if it ever becomes complete, will naturally be tremendously political. I have not, therefore, the remotest idea of exploiting labour or organizing it for any direct political power of first-class importance when it becomes a self-existing unit.

Labour, in my opinion, must not become a pawn in the hands of the politician on the political chessboard. It must, by its sheer strength, dominate the chessboard.

Gandhi believed that because of meagre income of mill-hands there is little accommodation for saving a part of their income for the rainy day and on occasions like strike they starve. Inorder to avoid this state of affairs he advocated the mill-hands to have subsidiary occupations, "I hold that a working knowledge of a variety of occupations is to the working class what metal is to the capitalist," For this purpose he strongly felt absence of coherent labour organizations, "But the difficulty is that whilst today capital is organized and seems to be securely entrenched, labour is not. The intelligence of the working man is cramped by his soulless, mechanical occupation which leaves him little scope or chance to develop his mind. It has prevented him from realizing the power and full dignity of his status. He has been taught to believe that his wages have to be dictated by capitalists instead of his demanding his own terms. Let him only be organized along right lines and have his intelligence quickened, let him learn a variety of occupations, and he will be able to go about with his head erect and never be afraid of being without means of subsistence."

Gandhi quoted example of Ahmedabad Union giving a list of subsidiary occupations taught to them, "An organized and systematic effort is now being made by the Labour Union (of Ahmedabad) in that direction. Mill hands are being taught to select occupations which they can practise in their leisure hours at home and which would give them substantial relief in times of unemployment. These are ginning, cleaning, carding and spinning of cloth, weaving, tailoring, soap and paper making, type setting etc."

There is strong case for the workers realising these principles and to live up to them to re-establish the social equilibrium upset by a variety of reasons.

PROFILE OF COMMUNITY PLANNING
AN APPENDAGE

By : **G. JAYACHANDRAN**

THE phrase "Community Planning" has now come into use to define the Indian rural development. This does not mean that a planned community is to be managed on the principles of political democracy, whereby every member of the community would vote for its leaders, who would then act representatives of the electorates of all grades. Rather community planning is a function of social democracy whereby every member of the community would become legitimately and adequately represented in the formulation of the plan and effectively associated and given an ardent opportunity of continued participation in the actual implementation of the plan.

There are stages in the growth of community planning, from necessary implementation upto total participation. The sanctions of an expanding community are, the fundamental nature of community patterns and behaviour, the fear of private thriving, the consent of the majority of the members of the community and the prestige of community control directed toward common welfare. The strengh of these sanctions is thought to justify an experiment in efficiency measured through promotion of human welfare.

The theory of compulsion has been expressly separated from the policy of integrating community activities, but a voluntary participation enthused by a spirit of co-operation will take place that of compulsion and aversion in the conditions of what is called "Community Planning". However, a kind of this planning involves *correlation* of social ideas and integration of economic activities of the community. Once these ideas and actions are effectively correlated and integrated through a process of community planning, these may give the community a sphere of direct economic control; and these may leave at the same time a wide field for private initiative and enterprise to function, however not allowing it (Private enterprise) to reach a point of profit which may put the interests of the community in jeopardy and nullify the working of the plan. All these conditions may be regarded as aspects of commnnity planning in a country influenced by the ideas of social democracy.

Every Community embodies a pattern which is an outcome consolidated into a social habit and the result of a double process of the adaptation to a physical environment and a moral atmosphere and of acceptance of the environment to certain human notions of value. Truly, community Planning to become an accomplished fact cannot overlook the human notions of value that govern the mind of the community. Because every social pattern is both an endorsement of some values and a negation of others: every community values some human qualities high and others a little or not at all.

Indians deeply resent any economic progress that is founded on ethical bankruptcy or spiritual servility. The Americans, Englishmen, Germans and the Russians have likewise their own standards and notions of human value, and conceptions of human life. Naturally in conformity with the principles governing the mind of the community, it (Community) provides some opportunities and withholds others, hails the possession of some qualities, and hurls down others which have proven to be contradictory to the general view of the community; makes assertions and warrants exclusions to achieve the plans as contemplated in anticipation with full confidence reposed on the integrity and fertility of the community's ability.

Community planning is the conscious outcome of the fact that every pattern of living involves limitations and it is a method of assessing widespread openings for achievement and accomplishment of the community's felt-needs and ideological cravings for a better living. A perfect community will remain ever incompatible so long man, the author of the plan, is imperfect. It will only be a dogmatic assertion if any planning is claimed to be perfect. It would be imperfect and it is very simple logic to claim a reversal.

The philosopy of community planning is essentially the psychology of group-thinking

and overtly the physiology of changing environments. Environments change because the patterns of living change and the limiting conditions prescribed to men in communities by their environment constantly urge them to adapt their patterns of living to the extent to which they do not agree passively the patterns into which they were born. The conditions of environment are dynamic in their origin and growth. This is partly due to the growth of group thinking and group-activities in the proximate posterity of a century and partly owing to the manifested aversion of communities to remain within a fold of static conditions and stagnant living.

A sheer activity alone, in consonance and pulsation with the changing conditions and circumstances will carry the community into a better state than its posterity. But this can happen only where communities are in contact with widely different attitudes and patterns of living. A community, which has this opportunity, will evolve into a system of life either by physical forces created within its own sphere due to its contact with extraneous elements or by the impact of human forces imported from outside. Thus the advent of white men on the Indian soil had pronounced effects on the political, social and economic life and institutions of our people. We hardly felt the modifications in our patterns of living, in the beginning, because we found it very hard at initital stages to adopt ourselves to changing conditions and contacts. We survived the social revolution begotten of our western contact and fairly we were able to synthesise the western concepts with our Indian tenets and maxims of life that govern our existence. We understood the weaknesses in the western outlook upon life and human notions of value and were in a position to assess the greatness of Indian way of life and approach of matters that concern a great deal with human happiness and dignity.

A reconciliation of man's dignity and human happiness was rather an outcome of man's progress in one practical branch of science—the knowledge of himseif. The rationale of ideologies were oblivion to the psychological inferences, and the significance attached to reasoning was rather shifted to the technique of thinking in arriving at truths and formulating principles on human notions of value. The Indian way of thinking has provided a magnificent interpretation to this particular fact of human history.

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society. *Whatever they can present for sale must have a ready market and cash payment because this may be considered to be the best incentive for the farmer to step up production.* It may be necessary at the early stages to subsidise production as was done at the Anand Dairy of Bombay. The Bombay Government offered in 1946 increased price to the milk producers of the area and build up the present Anand Factory. If the planned area is near a big town where milk can be transported, it can be done so through the latest transport method, pasteurised and sold. If the area is far off from town, creameries that are envisaged in the second five year plan may be located in the area and all the milk produced in the area may be purchased and converted into by-products and marketed to outside areas. This means implementation of various machines in the area like cream separaters, butter churners, making utensils for milk and containers for milk products, packing and label, etc., thus giving rise to subsidiary industries with employment opportunities and rise of living standards. At this stage, the all-India Womens' Food Council may step in to teach women of the area the ways of economic and scientific production and preparation of food, the adoption of economic, clean and nutritionally well balanced diet.

There is lastly one other important topic over which the farmer is nervous about maintaining valuable livestock, that is, immediate veterinary aid during sickness to his livestock. *A well equipped up-to-date veterinary hospital can be located specially for the area.* The Doctor-in-charge can make periodical visits to the villages and treat cases in his mobile dispensary and take sick animals in the ambulance van to his headquarters for prolonged treatment.

SOME THOUGHTS ON LONG-TERM PLANNING

By : **MAHESH CHAND**

ECONOMISTS owe a responsibility to the Planners of Indian Economic Development. So the production and distribution functions should be analysed dynamically. At any moment the country has a stock of resources (wealth) which in part, is used fully, partly and not at all. The new attempt is to make a better use of the resources in order to produce more consumer goods as also to produce more capital goods. One method is to make a better use of the existing production capacity. The other method is to start additional production units.

Before the additional production units can be started it is necessary that additional producer goods should be produced. This means that those who shall produce the additional producer goods should be able to secure necessary consumer goods from the consumers' goods sector. In other words, the production of consumer goods should be so much as to support not only those engaged in consumer goods industries but also those engaged and to be engaged in the producer goods industries.

Consumer Goods Labour Can't Exhaust Goods

The expenses of a producer in a consumer goods industry are mainly divided in three directions:—

(i) On labour

(ii) On maintenance

(iii) On additions to capacity

A part of the expense on maintenance and the whole of that on creating additional capacity reach the producer goods sector and thence partly to labour engaged therein. Normally a consumer-goods-producer shall ask for a price based on both the expenses —that going to his labour-force and that to the producer goods-industry-labour-force. His own labour force (i. e., the consumer goods industry labour-force) therefore cannot exhaust all the consumer goods that they produce : what they get will never be sufficient to pay for all that they have produced.

If economic principles are followed-and every producer invariably does so-it is not necessary to lay down a condition that, given a wage level, that technical choice should be made which satisfies the following codition :-

$$\frac{\text{Net value added per man-hour}}{\text{Wages paid per man-hour}} > 1$$

for it is always true. Expenses are always adjusted to leave a margin for making payments for producer-goods-nay, for a payment to the entrepreneur.

Nodoubt the point does deserve a special emphasis in the public sector if it is feared that what is produced cannot be sold so as to cover just (or more than just) the cost of production.

Even where production is started under a subsidy from the State, it is desirable to emphasize that the sale proceeds should cover the cost (including the subsidy as far as possible). A subsidy really means a payment by the people to enable a part of themselves to produce and dispose off the product.

They can Consume Some Goods Unduly

There is however another danger to which attention must be drawn. The purchasing power reaching the hands of labour engaged in consumer goods industries may enable them to take away more than their due share of certain consumer goods. If it is visualised that on an average 40% of one's earnings are spent on non-food items,

it is likely that labour from the consumer goods industry may spend 80% on food and thus consume more foodstuff thus creating a food-shortage for those engaged in producer goods industries. In India such a condition does exist in so far as most of the non-agricultural labour is located away from rural areas: and even in agriculture, there are pockets which produce predominantly non-food crops so that food products have to be imported from other regions.

A lesson

A man can live without clothing and shelter to a greater extent than without food. It is therefore necessary that food production must be increased to a limit so that a surplus shall be left even after the very producers have filled their bellies to the full. Till the time that this does not happen, agriculturists must be forced to part with a portion of their food production either under the garb of a high cash rental or direct compulsory sales. The former method is preferable.

Another Lesson

Mention may be made now of the underlying necessity that all unnecessary consumption including conspicuous consumption should be eliminated. This is the greatest danger under planning, and we do not need an expert from (say) United Nation as Technical Cooperative Administration to emphasize this. But if any such expert has done so, it would be an additional emphasis on what we have repeated time and again in these pages. Every Indian, every leader-Minister, Secretary, teacher-and every worker must realise-if necessary, must be made to realise-the utmost necessity to maintain his efficiency at as low an expense as possible. Pt. Pant mentioned it at the CALCUTTA A.I.C.C. meeting (Nov. 56) but we want him and others to become living examples of the same.

A Third Pointer

Mention must also be made here of the necessity to reduce the profits which are not reinvested or to take steps to increase the reinvestment of profits. Should this not be possible because of less hold on the private sector, steps would be desirable that lead to the introduction and adoption of more efficient techniques, with the condition that the new techniques are made use of to their full capacity. If the new techniques are used to less-than-the-full capacity, it is possible that the surplus needed may not become a reality.

Research Needed.

The necessity to make the best use of existing capacity points to the importance of such studies as are indicated below :—

1. Economic efficiency of different production units.
2. Use of raw materials and energy per unit of out-put.
3. Labour productivity in different production and transport operations.
4. Position regarding maintenance and repairs. Causes of machines being idle and frequency of repairs.
5. Comparative study of production per unit in concerns with similar production equipment and causes of the difference.
6. Overhead costs.
7. Scope for better organisation of work and application of quality control in every sphere of production.

Facilities for Research

If such studies are organised by the State, the private enterprise may have an objection on grounds of secrecy. If such studies are organised by academic circles, even then private enterprise may not realise the importance and look upon those sent to make a study with a suspicious eye. But such studies can very well be organised in the public sector. Yet the feeling is that the State authorities do not want to allow academic interests to do such studies: there is an officialdom there which is also likely to be a hinderance. States would therefore

be well advised to invite economists to make a critical study of their production units with specific instructions to the production-unit personnel that the demands of the 'student' be met promptly.

II

Consumption Studies

Another line of action may be through a study of the effect of felt needs. This involves consumption studies. We know that the approaches to economic development may be twofold. One, produce more producer goods: then it shall be possible to produce more consumer goods. Two, produce more consumer goods by working plants at full (or overfull) capacity and consume more consumer goods: producers of consumer goods shall themselves try to expand production and create the demand for producer goods which in turn shall lead to an expansion of producer-goods industries. At any time in a country the consumers have a certain purchasing power in their hands and are using it to consume certain things. If there are available data for the sales (or even production) of main consumer goods, it should be possible to study the short-period trends and thus find out the rates of expansions. From this estimates can be made of the rate at which demands shall be made on the producer goods industries which supply producer goods to the consumer goods industries. These studies should help the economists and planners to understand the trends when people have a free play with their felt needs. Should the trend of consumption show features which cannot be considered desirable from the point of view of health, circumstances or culture, the alternatives shall lie in two directions. One, the consumers may be properly educated, *two*, the supply of undesirable goods may be reduced so that people would be forced to curtail consumption. The former method is preferable to the latter. In the latter method, the opposing forces shall arise on account of the following factors: *One*, the extent to which the consumers have become addicts so that they find it a necessary evil to purchase the commodity even at higher prices, *two*, if the elasticity of demand is low, private enterprise would be tempted to produce the commodity secretly in contravention of legal restrictions in order to make profits in the short period.

And use of Results,

Having known the trends of production in consumer goods industries and those in the corresponding producer goods industries, it should be possible to regulate production in the interest of desirable economic consumption. Regulation of production implies expansion in certain branches of production and slow (or no or negative) progress in others. In the branches where expansion is desirable, the question shall arise which techniques should be adopted. In this connection the criterion may be laid down that the chosen technique should be such as shall lead to greatest net-value-addition due to production, assuming the continuance of a certain level of prices and wages. Alternatively, the criterion may be that the output should be maximum per unit of money spent on capital and labour each. This second criterion is likely to be difficult to apply in practice if there are joint products, unless it is decided to take into consideration only the main product or main quality (or type) of the product produced. In general, in view of the data flowing in due to the census of manufactures in India, it is more convenient to use the figures for value added by manufacture.

If you want to Earn, Keep Waking At Night

It is also possible that the net value added may be calculated on some standard pattern. This is not so in regard to the census of manufacture figures. No consideration is kept of the extent to which each

machine is used and the number of shifts worked. Under a standard pattern of calculation this broblem shall arise. We shall have such questions as: Should each machine be assumed to be used to its full capacity? Should each production unit be assumed to work 1, 2 or 3 shifts? (or must a round-the-clock activity be assumed only where it is inevitable for the procedure of production? This involves a philosophical question: Should a part of the population be made to keep waking at unnatural hours in order that they may have the opportunity to earn a living? True, it may be said that nobody need force anyone to take up a job which entails waking during midnights; but when we plan on this basis, we assume that enough persons shall be forthcoming who will undertake the job at night. Should such an assumption be made?

Latest Technique

When it is a question of comparing the techniques, it must also be borne in mind what is the life of the machines used? This question arises not only on account of the wear and tear caused on account of the use, but also in regard to obsolescence due to new inventions and discoveries. Incidentally, inventions and discoveries remind one of the idea of certain authorities that our plants in the field of producer goods should be of the latest type. In view of the rate at which scientific inventions are being made, would the authorities decide to scrap the installations if within a few years scientists invent a new method? Our answer is 'No' and the latest technique may be preferred only because the starting point is the best opportunity to start with the best available efficiency.

Why should not a similar attitude be taken in regard to the consumer goods industries? Our answer is that we must. But taking the two together, we would only submit that account must be taken of the desirability of according an independent earning status to those (a) who do not have any supporters, (b) who are now expected to earn themselves to support themselves and their families and (c) who, if supported, do not employ themselves efficiently but are apt to indulge in undesirable activities. So far as India is concerned there are no data in regard to such persons, but we may roughly say this that all those who are majors minus the number of housewives (i. e., households) belong to this category. Hence, if with the intelligence that people possess they are able to produce workable producer-goods with less capital-intensive technique, the same may be preferred.

A Danger

Whatever be the latest technique, a judgement that it is best should be justifiably made after experiments in Indian environment with Indian labour. This is not practicable. We shall therefore have to depend on the experience elsewhere—presumably on the experience in the western (advanced) countries. While one should not be dogmatic about the inadvisability of blindly accepting these experiences, one *must* mention that without a prior wise examination the acceptance of these experiences as being true for India is dangerous.

III

So far as we can gather the Government of India, through its statisticians and certain foreigners is paying attention to long-term planning problems and it is only just that we refer to these in our own way.

Labour, Capital and Output are three factors which are receiving attention of the planners these days. Capital output ratio, labour productivity, and capital per worker are the derived concepts which are predominant in discussions on economic planning and economic development. Before we delve in the sea of jargons, a funda-

mental idea is that he, who is allowed to live, must be so engaged that he adds a *net value* which not only covers what *he consumes* but leaves a surplus (an extra amount) for *others*. The term 'others, includes (i) those whose product he requires for use as also (ii) those who cannot (or are not expected to) make any contribution in an economy of interdependence. If our worker belongs to the consumer goods industry, 'others' stands for (i) workers in the producer goods industry and (ii) children, old men, the incapacitated and women.

The interpretation placed on 'what he consumes' is what the worker consumes. If we interpret it to mean "what he and his dependents consume", then the term 'others' can be interpreted to mean (i) workers in producer goods industry and (ii) those covered by social insurance or those who are not dependent (i. e. are not supported by) any worker.

There is another point. In a planned economy the interpretation placed on "what he consumes' should be 'what he is expected to consume after the plan period'. If he is expected to consume 10% more, then the net value added should cover 1.1 times what he actually consumes and leave an extra amount.

Under planned development, the production expected can generally be expressed in terms of 'aggregates' only. We can say that aggregate net value added should more than cover 1.1 times the aggregate actual consumption. It does not mean that every worker shall necessarily get 1.1 times the consumer goods.

Net value

The term 'net value' is also not without ambiguities. It means gross value (expected sale proceeds) minus the production expense. Production expense includes depreciation charge but does not include what is paid to workers. The depreciation charge should be based on the expected life of capital. Expected life is dependent on (i) the period of normal use after which capital shall become useless and (ii) the period after which alternative capital with better efficiency shall become available on account of scientific inventions and innovations. There is another factor which is named by some. We expect that as the plan period is spent, the worker shall consume more and more. Hence what covers actual consumption today may not cover actual consumption after four years. Such production activity—hence such capital—shall deserve to be scrapped after four years. But this consideration should not weigh with us, because we have calculated consumption at a higher rate (1.1 times actual consumption).

Short Period Policy.

The point to be discussed fundamentally is this. Shall a worker be provided with work even though the net value added is less than what he consumes. Our answer is 'No'. But we must not hesitate to provide him with work—and hence choose a technique—which means a desirable net value today (at his present consumption level) and may become undesirable after sometime. It has been the view of some people that we must avoid such techniques and prefer to support people through public works, relief allowances and doles till we are in a position to provide them with work on the basis of better technique.

The implications of this view to us are that in so far as better techniques cannot be provided, men should be free to recreate all the twenty four hours, and use the allowances (which shall obviously be in cash) to share the existing consumer goods. Families should support the unemployed members in the family till they can be provided work with better techniques. It is true that, so long as no jobs become available, families do continue to support the dependents, even though un-

willingly. But there is also the problem of the activities indulged in by the unemployed. In so far as their activities enrage the family and the locality, planners may shut their eyes. But when their activities begin to affect the life and activities of society and could be termed as subversive of law and order, it does not appear desirable to advise a government to adopt a policy of economic development with better techniques only.

A machine, which is not used today, stands still and is not used; but labour which has not been used today is not unused: the owner of labour-power does use it according to his free choice and whim. This free choice and whim may take dangerous shape when the owner happens to possess a capacity, which, if put to a suitable use, would enable him to live a better life than he does today as a dependent member of a family or society. If man is prone to shirk work, man is also prone to feel cross if, inspite of his capacity, he is forced to a low standard of living, because planners cannot (or do not want to) provide additional work on the basis of *any* technique. He is then likely to feel frustrated and be wickedly inclined.

Hence, for all those who can work and who are willing to work, work must be provided-work which is conducive to life in society and suited to their taste so far as those are concerned who are shirkers and (ii) work, which is likely to lead to an opportunity that would yield a satisfactory earning, for those who want to stand on their own legs.

We may now introduce to you certain economic jargons and prove that greater is the productivity of workers in consumers goods industry, greater is the possibility of employing workers (and hence of expanding production) in the producer goods sector. Verbally, it is not difficult to see the justification for this hypothesis. Assuming that workers in consumer goods industry have a prior approach to the products of consumer goods sector, workers in the producer goods sector can get whatever is left over, i. e., is surplus from the consumer goods sector. Hence, greater is aggregate excess (or surplus), greater is the expansion of producer goods sector. The aggregate surplus evidently depends on the number of workers in the consumer goods sector and the excess of productivity over consumption. If Ei and Ec denote the workers in the producer and the consumer-goods sectors, and IIc and Wc denote the produce and consumption (or wage) per worker in consumer goods sector, then we can say that

$$Ei \propto Ec\ (IIc - Wc)$$

If Pc would denote the ratio of IIc to Wc, it may be termed as measuring the productivity of labour in the consumer goods sector and we may say that

$$Ei \propto Ec\ (Pc - 1)$$

The sign of proportionality can be converted into that of equality easily by some one, though it will be wrong. It will be wrong because all that is produced for consumption is not consumed by those engaged in the producer and consumer goods sectors. There are government servants, and those living on unearned incomes who also consume. Another factor which would heighten the inconsistence of the sign of 'equality' is that workers in consumer goods sector do not have a priority as regards consumption. It is definitely not true of the consumer goods industries located in urban areas nor of the non-agricultural food-products. Even in regard to the agricultural food products, it would be wrong to assert that whatever agricultural workers earn secures for them a prior approach to the consumption of what they produce.

However, the simple lesson is that those, who produce essentials of life, must atleast produe them in such quantities that they would suffice for the producers as also for

those engaged otherwise in the national economy. If they could produce still more in order to serve the unfortunate (in this respect) outside the nation, it shall be a service to humanity.

So far as the planner is concerned, $Ec\,(Pc - 1)$ gives an idea of the extent to which he can concentrate on the development of producer goods sector. For this purpose, let us represent certain terms as below :—

Term	*Symbolic Representation*
Capital	C
Value of Gross output per worker	Vg/N
Value added per worker	Va/N
Net value added per worker	Vn/N
Capital per worker	C/N
Wage (or consumption) per worker	Wi and Wc*
Number of workers	Ei and Ec *
In consumer goods industry	
Net productivity per worker	$\Pi c = Vn/Ec$
Surplus per worker	$Sc = \Pi c - Wc$
Aggregate surplus	$Sc = Ec(\Pi c - Wc)$
Consumption requirement in producer goods industry	Ei. Wi

Since the consumption goods requirements in the producer goods industry must be met from the consumers goods surplus, we may say that

$$EiWi = Ec\,(\Pi c - Wc)$$

If there be a standard wage in all the industries—at least this can be assumed to be so while calculating future employment, $Wi = Wc$, and then

$$Ei = Ec\left(\frac{\Pi c}{Wc} - 1\right)$$

$$= Ec\,(Pc - 1)$$

— a result which we could write *better* from verbal logic easily.

The lesson

The lesson of this formula is easy. In India agriculture predominates the economy. Also, the agricultural sector provides the essentials of life—food, cotton and wool. Hence, if we want that India should be able to invest more in producer goods industries, it is essential that the output in agriculture should be so large as to satiate the agricultural workers and leave a large enough surplus for the non-agriculturists. We all know too well that whatever is produced is less than sufficient to provide a balanced diet for the agriculturists. It is therefore highly important that the Government should still devote more attention to the promotion of agricultural activity by paying attention to the financial, tenurial, scale, and sinews of agricultural production. This is a qualitative conclusion which cannot be changed, no matter how the statisticians fret and fly.

* The suffix (i) stands for producer goods sector and the suffix 'c' for consumer goods sector.

ECONOMICS OF THE AMBAR CHARKHA

By : **PROF. C. L. KHANNA**

"I may deserve the curse of posterity for many mistakes of omission and commission but I am confident of earning its blessing for suggesting a revival of the Charkha. For every revolution of the wheel spins peace, goodwill and love. And with all that, in as much as the loss of it brought about India's slavery, its voluntary revival, with all its implications, must mean India's economic freedom," observed Mahatma Gandhi, the Father of the Nation. Charkha was, thus conceived as our life-line and a symbol for the economic renaissance of our country which was, and still is, steeped in

appalling poverty. Naturally enough cottage industry, as symbolised by Charkha, was made the king-pin of our First Five-Year Plan. It has been realised now by the architects of our national economy that the rejuvenation of India needs a dose of capital-intensive industries. It is a "big" change. It involves a revolution of a vast magnitude. But in no way does it imply the minimisation or neglect of the vital place which the cottage or other "light" industries have to play in building India anew. It rather signifies that our industrial structure is to be a "a pyramid of industry broad-based on progressive rural economy[1]". This is not a doctrinaire but a pragmatic approach to the twin problem of poverty and mass unemployment.

In the consumers' goods industries, which fall within the ambit of the private sector, one vital consideration is the production of cloth—an article of basic necessity next to food. A heavy and onerous responsibility to "clothe the Nation" therefore devolves upon the cotton textile industry. It is a happy augury that the Indian cotton textile mill industry has come of age with the inauguration of the Second Five-Year Plan. Barring the United States of America, India today is the world's foremost producer as well as a leading exporter of cotton textiles. But the apprehensions are that this flourishing industry may be thrown into the doldrums as a result of the parochial policy dictated by the sentimental and dogmatic attachment to the Charkha. The industrialists' fears have assumed grave proportions ever since the Karve Committee recommended that, until the experiments now being made on Ambar Charkha are finally known, licensing of new spindleage should be deferred and that the production of the yarn required for the additional production of cloth during the Second Plan period should be organised on a decentralised basis. This artificial boosting up of the 'inefficient and outmoded' machine at the alter of the textile mill industry has generated a spate of controversy as to the validity of this proposed measure. As it is a cruciali ssue and is likely to affect not only one industry in isolation but the entire fabric of our economy, it deserves a dispassionate study at our hands.

1 Karve Committee Report on Village and small scale Industries (1955), page 22.

The Problem Stated.

It would help understanding our approach if the issue involved is explained at the outset in all its bearings.

The aggregate outturn of cotton cloth in 1955 touched the mark of 6847 million yards as shown below :—

Table I

Source	Output in million yards.
1. Mill sector	5094
2. Powerloom sector	273
3. Handloom sector	1480
Total	6847

It is anticipated that with the increasing tempo of socio-economic development during the Plan period 1956-61, with the accretions to the national dividend to the tune of 25 percent, with the expected price-decline in food materials and with the growing consciousness for higher living standards, the take-off for cloth would rise.[2] While no reliable data for the computation of the income-elasticity of demand are forthcoming, it is assumed that the 25 percent increase in the national dividend will cause a corresponding rise in the cloth demand, that is, there will be an increase in demand from 16 yards in 1955-56 to 20

2. This upward trend was perceptible even in the recent past. On the 4th February, 1956, the mills were estimated to have held with them a total of 1,40,000 bales of cloth as against 2,60,000 bales on the 26th March, 1956. The downward trend of the unsold stocks and the upward trend in production are clear pointers to the higher cloth consumption.

yards[3] per capita in 1960-61—the concluding year of the Second Five-Year Plan. If the per capita consumption is taken as 18.5 yards, as done by the Government, the total requirement of cloth would work out to 7400 million yards for 400 million souls, the estimated population of our country. Adding 1000 million yards for export purposes, the cloth demand would aggregate to 8400 million yards against the 1955 output of 6847 million yards. There will, thus, be a shortfall of 1553 million yards.

As stated earlier, the Kanungo and the Karve committees were of the view that the mill and powerloom production should be pegged at the existing level of 5094 and 273 million yards respectively and that the additional requirement of cloth should be met exclusively by the handloom sector. It follows that the production from the handlooms has to expand from 1480 to 3033 million yards (exclusive of the contribution of the powerlooms.) The productive capacity of handlooms will have to be switched on to more than double the present level of output. It is proposed that the additional demand for 413 million pounds of yarn to produce more cloth should be met from the Ambar Charkha. This recommendation of the Karve Committee had cut the mill-owners to the quick and provocated them to vindicate with a vengeance their claim to produce at least a part of the increased demand for cloth and yarn. A compromise scheme distributing the additional demand of cloth among the various sectors, including the Ambar Charkha, has been adopted as an experimental measure. The question is whether it is conducive to the larger interests of our national economy and whether the Ambar Charkha is competent to deliver the goods. The study can be divided into two main heads:

(i) Technical and organisational aspect; and (ii) Economic aspect.

The Genesis of Ambar Charkha

We may preface the study of the technical aspect of the Ambar Charkha with a brief history as to its growth and development.

The invention of the Ambar Charkha is credited to Shri Ekambaranathan, a villager of Papankulam, Tirunelveli District, Tamil Nad. It was first constructed at Kallupatti some seven years ago. It is a four-spindle spinning wheel with dimensions: 18 inches long, 16 inches broad and 12 inches high. It is a hand-operated machine. Except for a few rubber parts, all the principal parts of the original model of this indigenous machine were made of cast iron. One unit of this Charkha comprised: one Drawing machine; one Carding machine and four spinning wheels. The Drawing and the Carding machines, both made of metal, are designed to feed the four spinning wheels with special types of tabular slivers used in the Ambar Charkha. The cost of this unit was initially Rs. 500, the cost of the metallic charkha alone being Rs. 80 to 100.

The Ambar Charkha was displayed for the first time at the All-India Khadi and village Industries Exhibition held at Delhi in 1953. Since then experiments have been made to manufacture it at lower cost and to make it possible to produce it in villages. Wooden models using some rubber parts have been manufactured. The cost of the latest available model of Ambar Charkha is Rs. 90:

Spinning wheel	Rs. 40
Drawing machine	Rs. 30
Carding machine *	Rs. 20
Total	Rs. 90

* Efforts are being made to dispense with this machine so as to reduce the cost further to Rs. 70.

3. The Kanungo textile Enquiry Committee in its report (1954) put the per capita cloth consumption at 18 yards and so did the Karve Committee. Shri P. Govindan Nair and V. Nanjappa, both members of the latter committee estimated the new demand in 1960-61 at 20 yards per head while the optimistic textile experts set the limit at 22 yards. Shri T. T. Krishnamachari said at a recent Press Conference (18.6.56) that if the cloth consumption rises to 20 yards the Government will not be found unprepared.

Ordinary Charkha Vs. Ambar Charkha

It may be of some interest to study how Ambar Charkha compares with the ordinary Charkha.

The ordinary charkha costs not more than Rs. 10 to 15 while the price of the Ambar variety may not be less than Rs. 70, if, as stated earlier, the experiment to separate out the Carding machine is successful.

An ordinary charkha yields 3-1/2 hanks of yarn of 16s per 8 hour day, while the Ambar Charkha is able to produce 16 hanks of yarn of 20s during the same interval. On the basis of output one Ambar Charkha is equivalent to 4-1/2 times the traditional charkha.

The counts of the yarn that can be spun depend on a variety of reasons e. g. quality of cotton, atmospheric temperature etc. Experiments conducted at some of the centres have shown the following results from Ambar Charkha :

Centre	Quality of cotton used.	Season	Counts of yarn produced.
(i) Wardha	Buri	Summer	76's.
(ii) Nasik &	Jarilla	Summer	32's. to 40's.
Wardha	Surti	Summer	52's.
	Kanpuri	Summer	12's.

It is claimed that yarn has been, and now is being, spun by hand in India upto 400 counts.[4]

The Ambar yarn has a tensility of 70 to 100 percent as against an average of 60 to 70 percent of the yarn spun on an ordinary charkha. The former variety of yarn is also more uniform. The Khera Ambar Charkha Committee, which released its report in June, 1956, said : "The *general* view of the Committee is that the Ambar yarn is fairly even and strong and suitable for weaving on handlooms".

4. Economics of Khaddar by Richard B. Gregg., page 88.

Thus quantitatively as well as qualitatively the Ambar yarn enjoys superiority over the ordinary one.

Organisational Difficulties.

The above facts also give an insight into the technical difficulties, and the cost factor. But that apart, there are some organisational difficulties, too, in introducing the Ambar Charkha.

The provision of the "new" charkha from the distributing centres to the workers scattered all over the six lakh and odd villages—some remotely situated, others not easily accessible due to transport bottlenecks—is an insurmountable hurdle. To overcome this difficulty, the Khera Committee has recommended that the charkha should not be manufactured in any central factory or in a number of manufacturing centres. This means that a large number of village carpenters will have to be trained in charkha manufacture, repair, and maintenance. It is no easy job to achieve that end immediately. It is only after a long span of time that we shall be able to accomplish anything in this direction. During the period of transition, there may be 'lack of production' as the Prime Minister Nehru said at a meeting of the Congress Party in Parliament on December 5, 1955.

The second difficulty in adopting Ambar Charkha will be in regard to the imparting of training to operators of the Charkha. In the urban as well as rural areas the charkhas are usually plied by the women folk and that too by old ones. In the villages, where "charkha industry" predominates, as many as 94 out of every 100 women are illiterate according to the analysis given in the Fifth Paper on "Census of India (1951)". To train them in tending the complex machine fitted with four spindles would be a Herculean task.

The distribution of raw material, the collection of yarn produced by workers for

transmission to the handloom weavers and the supply of precision parts from a central agency are fraught with difficulties.

All these obstacles may appear transitory and some, not all, of them may even vanish in the course of time. But to shelve them as imaginary or insignificant would show lack of prudence and realism on our part. That is why, perhaps, Shri Nehru advised that Ambar Charkha may suppliment, not supplant, the cotton textile mills and that we might "err on the side of over-production rather than under-production".

Economic Aspect

So much about the technical and organisational aspects of the Ambar Charkha. We shall now discuss the economic aspect of the issue.

A. **Capacity.** The first point which strikes one's mind is whether the handloom industry has the competence to produce the targeted output of 3033 million yards of cloth as worked out above.

The following figures may be studied in this connection :—

Table II

1. No. of cotton handlooms	... 2.59	millions
(a) Domestic cotton handlooms.	... 0.5	„
(b) Commercial cotton handlooms (active)	... 1.69*	„
(d) Commercial cotton handlooms (Idle)	... 0.40	„
2. Average daily production of cloth of a fly-shuttle loom.	... 6 yards.	
3. Average number of days for which active looms are worked.	... 150 days.	

* N. B. 1.24 million according to the Kanungo Textile Enquiry Committee (1954).

Assuming that the commercial looms, active as well as idle, are fully employed, the cloth production will be 1881 million yards as against 3033 planned for. To reach the target[5] by 1960-61 the entire handloom sector will have to be worked for about 300 days. But what is the guarantee that idle looms will be utilized fully or that the work-days will be doubled ?

Similarly it is not certain whether the requirement of yarn for the additional cloth can be met from the Ambar Charkha. The yarn supply will have to rise from 21 million pounds in 1956-57 to 413 million pounds in 1960-61 from this source, that is, about 20 times.

Again, it is beyond one's comprehension why the tempo of progress of spindleage should be arrested in our country while some of the other advanced countries are following an expansionist policy as indicated below :—

TABLE III

Country	Spindleage in millions for the year ended July. 1955	1954	1953.
1. U. K.	25.18	26.56	27.26*
2. U. S. A.	22.25	22.71	22.83*
3. India**	11.89	11.72	11.43
4. U. S. S. R.	10.15	10.15	9.90
5. Japan	7.96	7.85	7.50
6. China	5 40	4.15	4.10
7. Pakistan	1.36	0.71	0.68

N. B. * Decline in 1955 is due to non-replacement of worn-out spindles, slack demand of cloth in foreign markets and price-fall.

** The spindles in India increased by 143 percent while the looms increased by 420 percent over the last half a century.

5. The Kanungo Committee suggested that the extra 1600 million yards of cloth can be produced by working one shift the additional 2.13 lakh improved handloom or powerloom for 300 days and producing on an average 25 yards a day. A critic has described the conversion of handlooms into semi-automatic handlooms as "ruthless in nature as a religious conversion".

The upward move in the cotton spindles installed has taken place in Asia and Oceania, as also, to some extent, in Africa. In Asia and Oceania the total number of spindles stood at 28.95 millions as on July 31, 1955, against 26.69 millions a year ago. It is obvious that by freezing the textile production of the mills and holding back the installation of new spindles for higher production of cloth, India will set back the hands of the clock. Can India, with almost half the spindles and looms of U. K. and U. S. A., compete with the two leading textile-producing countries and capture foreign markets? If not, the cotton industry will not only *not* have adequate exportable surplus to earn the much-needed foreign exchange,[6] but will not be able to keep abreast with the ever-increasing domestic demand for cloth.

Handloom Industry, at what cost?

B. Cost to the consumer. We have seen so far that, both in respect to the feasibility and desirability, the Ambar Charkha and the Ambar-yarn-fed handlooms cannot meet the situation. This argument is further strengthened from the cost view point. We shall first consider the cost to the consumer of this cloth.

If reliance is placed on the handloom cloth as proposed by the Karve Committee, the consumer will have to pay a higher price. The advocates of handlooms hold that the price difference between the mill and handloom cloth is very small ranging between four or five annas as calculated below :—

Table IV

	Price per yard in annas.
1. Average price of handloom fabric	19.0
2. Ex-mill price of mill cloth	11.0
3. Average rate of excise duty	1.1
4. Distribution cost at 15 per-cent on 12.1 annas	1.815
5. Sale-tax on 13.915 annas at 0.5 anna in the Re.	0.4348
6. Total of items 2 to 5 (price of mill cloth)	14.3498 or say 14.4
7. Difference of price in hand-loom and mill cloth)	4.6 annas.

6. The value of foreign earnings from 1947-54 works out to Rs. 417 crores. At this rate the industry will make a welcome contribution of more than Rs. 300 crores to the foreign exchange during the Second Five-Year Plan period.

According to some other estimates the price of Ambar cloth is 5 to 6 annas per yard above the mill cloth and 2 annas per yard above the handloom cloth. On this basis the handloom cloth is dearer than the mill cloth by a margin of 3 to 4 annas per yard. In other words, a consumer can consume, for the same outlay, 19 to 25 percent (according to Shri G. D. Somani, retiring Chairman of the Mill-owners Association, Bombay, it is 27 percent) more of mill cloth. It means so much improvement in the living standards of mill-cloth consumers. The protagonists of Ambar Charkha believe that even this narrow margin of a few annas will be wiped out with technological improvements and lower operational costs of the Charkha.

Cost of Ambar-and Mill-yarn to the weaver. The question arises: does weaver gain in wage-income? It has been estimated that if 1200 million yards of cloth were produced by handlooms instead of by mills, the consumer will have to pay Rs. 143.40 crores in the former case and Rs. 112.56 crores in the latter case. Out of this additional payment of Rs. 30.84 crores the handloom weaver will share a very small chunk of Rs. 24 lakhs (less than one percent of the extra payment) and the balance of about 99 percent will be appropriated by other people. So while the consumer pays more, the weaver, in whose name the mill sector is required to suffer and sacrifice,

gains little. The handloom industry will thus have the worst of both the worlds.

Again, how much has the weaver to pay for the Ambar yarn? This can be studied at a glance over the comparative prices of mill-and Ambar-yarn worked out below :

Table. V

Price of yarn per pound.
Counts.

	16s.	18s.	20s.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
1, Amber yarn.	2 8 3	2 13 7	3 0 10
2, Mill yarn	1 8 0	1 9 6	1 10 6
3. Percentage difference. of 1 over 2.	67.71	78.76	83.96

In simple words, the price per pound of Ambar yarn is about 1.75 times the mill yarn. In terms of labour cost one pound of yarn produced on the Ambar Charkha takes at least 56 times the man-hours required to produce the same quantity of mill yarn. The production of Ambar yarn is more labour-intensive but costlier in terms of money.

Social Cost. The proponents of Ambar Charkha hold that this will provide a solution of the chronic and vexatious problem of unemployment and under-employment in urban and rural areas. The All-India Handloom Board has formulated a phased five-year Plan to provide 25 lakh charkhas which will create employment opportunities for 63,32,000 persons as under :

(i)	Spinners	50,00,000
(ii)	Weavers	12,00,000
(iii)	Carpenters	72,000
(iv)	Artisans for washing, dyeing and printing	40,000
(v)	Other workers.	20,000
	Total	63,32,000

If we study the employment potential we find that the net additional production of 1200 million yards of cloth will require 84,000 if produced by mills and 8,40,000 if produced by handlooms. This gives a ratio of 1 : 10 in the two sectors. It is an optimistic picture. But the cost of the Ambar Charkha experiment to the country will be out of all proportions to the employment benefit. Taking into consideration only the revenue aspect, the exchequer will suffer a loss to the extent of Rs. 11.88 crores in receipts.

Viewed from the earning standpoint we find that the Ambar Charkha provides but subsistence wages. It hardly gives one rupee daily wage. The Khera Committee has suggested a flat piece rate of one and a half anna per hank of all counts. This means a daily wage of about 1½ rupee for 16 hanks produced by working the Ambar Charkha for 8 hours in a day. Is this a living wage or does this ensure "a decent standard of life?"

Earlier it was believed that the State will have to provide for a subsidy of Rs. 80 crores during the Plan period. In regard to this the Khera Committee has recommended for the present to give a minimum of subsidy of four annas for one rupee worth of cloth. It is doubtful whether this measure would accord adequate protection to the Ambar Charkha projects. In this connection it must be remembered that the rationale of protection should be "developmental protection." We have not merely to foster particular branches of production but to induce such a change in the demographic and industrial structure as will transform the economic environment and raise the level of productivity in the country as a whole.[7] Is this criterion fulfilled by the Ambar Charkha ?

The Government Policy

Notwithstanding the weakness from which the Ambar Charka suffers, our Government, wedded as it is to the Charkha Philosophy of Mahatma Gandhi, has sanctioned about Rs. 70 lakhs for an "interim Ambar Charkha programme" during 1956-57. The scheme envisages :

7. V. T. Krishnamachari Fiscal Commission Report (1949-50) volume I, Page 9.

(a) the manufacture and distribution of 10,000 Ambar Charkha sets. This limit for the year 1956-57 has been enhanced to 75000 charkhas on the recommendations of the Khera Committee, and will be further augmented to two lakh charkhas for 1957-58 if the new experiment proves a success.

(b) continuance for one more year of the existing 15 training centres, 100 production-cum-training centres and 6 functional offices;

(c) the opening of 100 more production-cum-training centres; and

(d) production of 300 million yards of cloth by handlooms fed by Ambar Charkha.

Under the new Textile Policy the production quota in various sectors will be as follows:

Table VI

Source.	Present output. Mn. Yards.	Additional quota Mn. Yards.	Total Mn. Yards.
1. **Handloom sector:**			
(a) Using mill yarn.	1480	700	2180
(b) Using Ambar yarn.	......	300	300
2. Powerlooms.	273	200	473
3. Mill sector (to be expanded with the installation of 14600 automatic looms)	5094	350	5444
Total	6847	1550	8397

In connection with this "Compromise Policy" the World Bank Mission made an interesting observation in an informal memorandum on "Indian Economic Problems and policies" submitted to the Union Government. We reproduce below *in extenso* the Mission's remarks:

"We believe that this compromise will prove largely unworkable. In our frank judgement, it greatly under-estimates the practical difficulties of installing and getting into operation the requisite number of Ambar Charkhas and power-looms on a decentralised basis ... The programme chalked out by the Government for meeting the increased demand for cloth will either jeopardize the supply of an essential consumer item at reasonable prices on the domestic market or bring about a serious curtailment of exports at a time when prospective export earnings appear already far short of what is required".

The Foreign experts have unambiguously and emphatically disapproved the Union Government in respect of Ambar Charkha projects.

Conclusion.

From the foregoing analysis it is abundantly evident that the Ambar Charkha and the handloom industry suffer from certain technical, organisational and economic handicaps.

If, as is apprehended, the targets of yarn and cloth assigned to them are not materialized, and if the mounting demand for cloth persists, the possibiliy of the emergence of cloth famine in the country is not ruled out. This, coupled with the increased incomes generated during the Plan period, may result in inflation, as indicated earlier, torpedoing the implementation of the Plan, which constitutes the sheet-anchor of our Nation. It was in view of these considerations perhaps that Shri T. T. Krishnamachari, the Union Minister for Industries and Commerce, expressed himself in forceful terms thus:

"I am against limitation of production of the mill sector but unfortunately other people in the Government differ from me. I feel that the best method of helping the handloom industry will be to have the mill industry heavily loaded, thereby giving a price advantage to the handloom industry."

Whether we do or do not agree wholly with the above view, it must be clearly understood that no "emotional approach" should motivate us to adopt the Ambar Charkha as a panacea for our economic ills, the manifest among which is unemployment. The economy of our country is still under—developed and unstabilised. To impose on it such devices as the Ambar Charkha is both inexpedient and inopportune. It is strange that while the countries in the West, which we wish to emulate, are introducing atomic power and 'automatic methods' for industrial progress we are trying to retrogress by adopting the slow-moving devices. This is repugnant to the modern age of speed and science. Let it be remembered, however, that we are not decrying the vast potentialities of the new invention of Ekambarnathan, but we must make sure that it fits in with our "perspective planning" and the policy of rapid industrialization. We must proceed with Ambar Charkha projects with caution as recommended by the Khera Committee lest our textile indstry is seriously endangered

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THE RURAL WORKING CLASS

By: **Dr. SHRIDHAR MISRA**

EVEN though more than 82 percent of the people in India are rural yet the rural problems have not received the attention they deserve. While ambitious programmes are drawn up for social security measures through State Insurance and Provident Fund, industrial housing, welfare schemes, industrial tribunals for settlement of industrial disputes, bonus and profit-sharing schemes, restriction upon the employment of children, regulation of the hours of work and many other measures which aim at improvement in the conditions of life and work of workers in the urban areas, very little has been done so far even to study and understand correctly the manifold problems which the workers in the rural parts of India have to face every day. The rural workers account for about half of the country's national iucome and their number is also far large than that of their counterpart in the urban areas. On the basis of data available in the 1951 census the number of rural and urban workers may be determined as under:

	Number in lakhs		
	Rural	Urban	Total
Self-supporting Agricultural labourers	142.7	6.0	148.7
Agri. Labourers-Earning dependents	50.9	2.0	52.9
Non-agricultural Employees	60.5	87.5	148.0
	254.1	95.5	349.6

Besides, there are 48 and 20 lakh non-agricultural earning-dependents in the rural and urban areas respectively. All of them may not be supposed to be employees. We may assume that the proportion of the employees in this case is the same which the employees among the self-supporting persons engaged in non-agricultural occupations bear to the total number in that group. On this basis of 6 : 17 and 9 : 16 for rural and urban areas respectively the number of employees out of 48 and 20 lakhs will come to 17 and 11 lakhs. Thus the total number of all workers will be as below:

Rural workers	271.1 lakhs
Urban workers	106.5 lakhs
Total	377.6 lakhs

On this basis it may be concluded, and I hope the conclusion will not be very wrong, that the number of wage-paid workers in the rural and urban areas is approximately 3 and 1 crores respectively or that the number of rural workers is three-times larger than the number of urban workers.

One further point which deserves attention in this connection is that while these nearly three crores of rural workers earn their living by working on wages which make the major source of their livelihood, there are about 122 lakhs of cultivators (self-supporting and earning- dependents) of land wholly or mainly unowned. They are like tenant-cultivators and hold land on varying terms and conditions including in a majority number of cases, if not in all cases, the condition to work for the land-owners during the busy season on varying terms of remuneration. We might regard them as part-time workers. Their condition may not be quite identical with hired workers; but at the same time it cannot compare with that of land-owning-cultivators either. They rank midway between the two and their status depends upon the size of land and the conditions on which it is held. Thus the problems of the workers in the rural areas are the problems of these two categories of workers.

While the importance of rural workers is fully realised and their problems are also well appreciated, their all-India treatment has always encountered many difficulties, some which are due to factors peculiar to agricultural industry itself and others are due to the nature of rural Economy in general. Thus, too large a number of workers scattered over far distant regions knowing quite different languages, patterns of living, social life etc. is obviously a major hurdle in the way of effective organisation of rural workers in India, where education and means of transport and communication are so less developed. The distinction between employers and employees is not as much marked in rural areas as in the urban areas. The relations between the two are more traditional, customary, and social than contractural. Often, the two work shoulder to shoulder during the peak days of the busy season inorder to finish up the work in time for all work in agriculture has to be finished within a given period of time as it cannot be carried over.

Thus the labourers cannot be organised as a distinct class against that of the employers. This also leaves little scope for strikes and lockouts in agriculture. Further, it is also often found that the same person is at times both an employee as well as an employer. The excessive dependence of agricultural industry upon nature or weather conditions restricts the scope for the application of scientific methods including time and labour saving devices which are easily introduced in urban industry. This makes the margin of profit in agriculture low and also uncertain. In turn, the agricultural wages are depressed and, consequently, the agricultural labourers find it rather difficult to collect adequate funds among themselves in order to run any organisation on a sound and permanent footing. Dependence upon nature, the unknown and the unseen power has made the people in the rural areas more fatalist. This tends to depress the spirit for risk and enterprise. Lack of education has led to loss of rural leadership. Over and above the villages being far removed from the seats of administration and/or education, the people living therein are virtually deprived of the benefits that automatically flow to people in urban areas and which lead to better conditions of life and work.

Nevertheless, such circumstances are not a peculiarity of India alone. Many other countries also have had similar experience. The knowledge of the history of economic development in the industrially advanced countries of the world shows that agricultu-

ral revolution has preceded everywhere the industrial revolution. The conditions of life in rural areas in such advanced countries are much better and conditions of work far more regulated than in the villages in India. True, this is the result of many years' planned effort in those countries and also that identical measures if adopted in Indian situation may not necessarily bring about equally goods results. Still they are true tellers that in order to achieve lasting and balanced development we must give the highest priority to the improvement of conditions in the rural areas of India.

The importance of the argument that the state of agriculture and the people living in rural areas should be improved has been realised and emphasised from time to time. "All authorities agree that Indian agriculture fails to obtain the yields of which the country is capable and that, in the words of the Indian Industrial commission, 'there is a vast field for improvement in the efficiency of the methods' " (1) This was the observation made by the Indian Fiscal Commission of 1921-22. The same Commission also emphasised the importance of industrial development and observed that "the industrial development of India has not been commensurate with the size of the country, its population and its natural resources." (2) The Commission believed that industrialisation will help to redress the excessive dependence on agriculture and that this will also lead to higher agricultural wages and improve the economic conditions in villages. On still earlier, the conditions of agriculture and rural economy were examined and reported upon by different Commissions etc. on Famine, Irrigation and Cooperation appointed between 1880 and 1915 and valuable suggestions were made for improvements in this direction. But in practice what has been realised is apparent from the fact that while about 72 percent of the population depended on agriculture in 1911, in 1951 such dependence was reduced to 70 percent. Likewise, in 1911 the rural population was 90.6 percent of the total population, in 1951 this portion was reduced to 82.6 percent. Thus over this period of 40 years, presumably with best efforts, while the dependence on agriculture has been reduced by 2 percent, the country has been urbanised by 8 percent.

If at this rate progress (?) were to be made it will take hundreds of years before India can be placed at par with industrially or economically advanced nations of the world. What has happened during the long period of foreign domination over the country by one nation or another in the form of exploitation is a past thing and its stock-taking is not likely to serve any useful purpose. At present it is essential that we should understand the village problems in their right perspective and attempt to solve them from their origin.

For the first time in 1950 51 the Government of India through their Ministry of Labour conducted an Agricultural Labour Enquiry and a good deal of material has been collected on the conditions of agricultural workers. Research investigations made by Universities and other Institutes also make available data relating to living and employment conditions of agricultural labourers in India. But a vast number of workers working in the non-agricultural sector still remain unthought of. The employment of women and children particularly in agriculture is undoubtedly a question which requires serious consideration. The present writer's views on this subject were published in the 'Rural India' in its issue of July 1951. The problem of unemployment and under-employment is equally serious. The housing condition in villages is far from being satisfactory. The

(1) Report of the Indian Fiscal Commission, 1921-22 p. 17

(2) " " p. 23

problems connected with health and medical-aid are not less important. Mass illiteracy crowns them all. Instances of forced labour are not rare. Our own investigations made in U. P. make us believe that 'begar' still prevails in villages.

A very important fact which must be kept in mind constantly by any investigator intending to enquire into the conditions of village people is that the problems of the later require 'sympathetic approach.' Sympathetic handling of problems should be the prime objective. Such sympathy can be acquired by an investigator or a village worker only by constant mixing and living among the village people. People in villages need more examples than tall talks of idealism from those whom they think to be better placed in life.

AGRICULTURAL BUSINESS: ITS ECONOMIC WEAKNESS

DR. R. K. SHRIVASTAVA

INSPITE of all the propaganda by the Government that the First Five Year Plan has succeeded in increasing the production of food-grains, crop failures of this year have belied this boast in as much as the Food–Ministry had to announce its arrangement for the import of grain. The Ministry tried, vainly, to pass over the gift of nature as the product of its effort, but it is high time for a pause and to take stock of our position.

Among the main measures outlined by the Planning Commission for increasing the Agricultural Targets, are the coverage within the plan period of entire hundred and ten million acres under paddy and wheat with improved seeds and balanced supply of fertilizers, organic manures and green manures. It is suggested that though such standard should be secured by voluntary means through the National Extension Service, a legal provision of this nature might usefully be included in the Land Reform Legislation of different States.

I may be wrong, but it is my experience that our farmers are very conservative but at the same time they do take to new techniques for increasing the yields of crops, if they can afford it, provided of course, they are fully satisfied that the new techniques will give them a larger net profit. It is up to the authorities concerned to satisfy them in this respect. Let the authorities probe deep into their conscience and find out if this has been done sincerely. It is unfortunate that what can be done and should be done by persuation, is sought to be forced by legislation and drastic legal means. Any such measures are likely to drive the poor cultivator out of his home and his field to take refuge in the New Million Rupees Industrial Projects.

Of the various factors affecting the agricultural produce weather is the most striking one. Improved seeds and fertilizers do play an important role in the production of vital food but unless rain and weather are favourable too, the expenses incurred on the above first two items are most likely to be a loss and may result in increased indebtedness on the part of the cultivator. It is intended in this article to find out whether a farmer is economically in a position to invest for the improvement of his crops and thus incidently for the enhancement of his income.

Table I

Crops grown during the year – 1st April 1955 to 31st March 1956.

Name of Crop	Acres	Seed		Value of seed in Rupees	Weeding Expenses in Rupees	Cash return by Sale
		Mds	Srs			
Wheat.	20	20	20	315	–	1213
Bengal-Gram	10	7	–	84	–	300
Black Gram	30	5	–	35	–	25
Green Gram	1.5	1	–	20	–	15
Peanut	1.75	2	–	25	10	125
Juar. (with Black-gram)		1	10	15	–	150
Small Millets	5.0	1	–	10	–	nil
Do	5.0.	–	10	5	–	nil
Do	1.0	–	2½	0.5	–	nil
Do	2.0	–	5	2.0	–	2
Maize.	1.5	–	5	2	–	5
Jagni.	20	–	20	10	–	nil
Potato.	4.0	24	10	441	67	2160
Bitter gourd	0.75	–	–	12	10	600
Pumpkin	0.75	–	–	3	–	150
French Beans	0.25	–	–	5	–	10
Capsicum	0.33	–	–	20	–	15
Cucumber & Cauliflower	1.5	–	–	27	–	nil
Total	105.33			1031.5	87	4770

Table II

Expenses	Rs.	Income	Rs.
Seeds	1032	By sale	4770
Weeding	87		
7 ploghmen	1400		
Land Revenue	135		
Depreciation on bullocks 13 nos.	195		
Depreciation on carts	20		
Implements, renewals etc.	100		
Supervision @ 60/– per month	720		
	3689		
Net profit	1081		
	4770		4770

For a number of reasons it is not possible to get authentic data from illiterate farmers. The data presented here is of Shri H. L. Shrivastava, a Retired Government Agricultural Farm Suprintendent, who has been farming in the present village near Chhindwara for the last sixteen years. It is confirmed by other farmers, that the yields of various crops were of the same order as shown in Table I.

Table I gives the crop acreage, expenses and income. It will be noted from the table that only Wheat, Gram, Peanut, and Juar have given tolerable good yield, where as crops of Black-gram, Green gram and Millets have failed completely. Amongst vegetables Potato and Bitter-gourd have given satisfactory results but others do not show an encouraging saving. But for a cold wave in the months of December–January, which has been visiting the village with dogged insistence year after year, Wheat and Potato crops would certainly have given a higher yield. Out of 105 acres of cultivated land only 36.5 acres have yielded good crop and the rest have proved to be a failure. This crop-failing was due to excess of rain and all the cultivators suffered. From the records of the previous years, as gathered from the cultivators, it can be summed up that agriculture is essentially a business of chance, since no body knows for definite as to which crop will be successful out of the ones which are sown. For example two years prior to this, Green-gram gave a bumper crop under the same conditions of cultivation but since then it has been failing successively.

Table II gives expenses and income account. Management and superivision charges are deducted at a very modest rate of Rs. 60/- p.m. This being the very minimum expense for a family of three. It will be seen that Rs. 1081/- is the net profit or saving.

Most of the farmers suffer from the shortage of working capital. From Table I it is evident that Rs. 1031/- have been invested in seeds. This amount if taken on loan in October and repaid by the end of May, will incur an interest of Rs. 48/- at 7% per annum. This leaves a balance of Rs. 1033/- only as saving in this particular case; and is hardly an incentive for investing large amounts in agricultural business, as crop failures are more common than good yields.

This venture involving an investment of Rs. 20,000/- should yield amount equal to 10% of the total investment, that is Rs. 2000/- per annum. This will enable better salaries to the ploughmen and then only educated persons are more likely to take to farming as their career in preference to a low-paid sedentary job.

It may be summarised from this discussion that Government should provide working capital at low rate of interest, say 3% to the cultivators as an incentive to invest in fertilizers etc. If cultivators are to take interest, the procedure of giving and recovering Takavi should be simplified with less and less of red-tapism. The Revenue Department seems to have failed to look jealously and properly after the interests of the cultivators, who are the back-bone of the Nation, and are the perpetual source of contributing the lion's share in the National Wealth.

HOW TO MAKE CROPS YIELD THE MAXIMUM?

By. **M. L. GUPTA**

IT is an incontrovertible fect that India needs an increase in her agricultural production and needs it very badly. In the First Five Year Plan targets of increases in the production of various agricultural commodities, over the base year 1950-51, food grains 14 percent, cotton 42 percent, jute 63 percent, sugarcane 13 percent, and oil seeds 8 percent—were set up and attained in most cases. In the Second plan a further increase of 18 percent in the total agricultural production (for food grains alone it is 15 percent) has been envisaged and yet The Planning Commission is not satisfied with the target figure. They would like it to be increased to about 40 percent and rightly too; for not only has more and more food to be found for a population that increases by about 1.25 percent every year, but a sizeable surplus, of both food and non-food crops, has also to be grown to push up the level of nutrition, support the industrial structure and to bridge the gap in the country's foreign exchange requirements.

An increase in production can be achieved either by bringing more land under cultivation or by increasing its productive capacity. The scope for the former is very limited as the larger part of the culturable waste—particularly the *kans* infested land-in Uttar Pradesh, Madhya Pradesh, Madhya Bharat and Bhopal has already been brought under the plough by the Central Tractor Organisation (C. T. O.) and the State Tractor Organisations. The remainder of the 'culturable waste' lies all over the country in scattered pieces which are either infested with persistent weeds or are marshy or saline and alkaline. But the reclamation of even the whole of such lands (which is very difficult to be done within the plan period because of various physical and technical complications) would, normally, not be able to boost up production high enough to reach our ambitious target. We, therefore, have to explore the possibilities of producing more from the land already under cultivation through intensification of efforts. This aspect of increased production forms the subject of study of this article.

The growth and production in any crop is conditioned by two groups of controlling factors, viz. the heredity or the genetic constitution of the individual plants, and the environment. According to Tansley (1923) (quoted from Klages 1947) the factors of the habitat (the terms 'environment' and 'habitat' are used interchangeably) fall into four distinct classes: (1) Climatic factors viz. temperature, moisture, light, atmospheric pressure, and the air currents - the latter two being of comparatively little importance, (2) Physiographic factors viz. the nature of the geological strata, the topography and the altitude, (3) Edaphic factors meaning the soil properties, both physical and chemical, such as the texture, structure, porosity as an index of soil aeration, soil reaction and the chemical make-up of the soil, and (4) Biotic factors under which are considered the effects of other plants or animals on the particular plant under study. These effects may be beneficial, neutral or harmful; there are symboitic as well as parasitic relationships.

The selection of the best-yielding varieties of crops made from the available ones after systematic varietal trials will take care of the heredity aspect of the crop production. But a crop or a particular variety of a crop will, normally, not do equally well everywhere. Its performance will vary with every change in the factors of the environment (particularly the climatic variations) which means that different

crops, or different varieties of the same crop, are required for different sets of environmental conditions.

Of the various factors of the environment, climate is almost beyond the control of man and together with the periodicity of its components-especially moisture and temperature-exercises decided effect on crop distribution. Klages (1947) has reviewed the observations of Hildebrandt (1882) as "uniform climates are conducive to the production of perennial plants, while climates with periodic changes give rise to annual plants. In the tropics uniformly high temperatures make continuous growth possible except under conditions where a period of drought may throw the plants into a period of dormancy. Perennial forage plants predominate in regions where there is sufficient moisture for the vegetative parts to live over from year to year. In the arid and semi-arid sections many plants are able to take advantage of the facts that the seeds are less susceptible to unfavorable climatic conditions than vegetative organs; consequently, the plants found are either annuals or are protected from damage during periods of extreme drought by special morphological, structural, or physiological characteristics."

Since climate is a fixed factor of the environment the cropping plans for different locations include, mostly, only those crops which are well adapted to the prevailing conditions of temperature and rainfall in those regions which means that climatic factors are sufficiently heeded as a matter of routine. Next to climate, the soil is the most important factor of the habitat. Soil variations are more universal than the climatic ones; climatic factors are spoken of as being regional, while soil factors may even vary from spot to spot in the same field. This makes the distribution of crops exclusively on the basis of soil type, very difficult and normally a crop can grow successfully on more than one type of soil provided the other factors of the environment (particularly climatic) are favourable. The soil in relation to plant growth should be considered in its three main aspects, viz. the physical, the chemical, and the biological. For the crops to yield the maximum the soil must be physically good as judged from its structure and texture—both of which are responsible for determining degree of the right soil type for the crop or crops to be raised—and the aeration and drainage. Chemically the soil should be of a high natural fertility possessing the proper proportion of different nutritional ingredients and of a, more or less, neutral reaction. The soil fertility can, to a greater extent, be augmented by the timely addition of the deficient element through proper manures and fertillisers. As regards the soil reaction most of the crops flourish better on neutral soils. There are certain crops which can grow tolerably well on fairly alkaline or acidic soils but the list is very small. Therefore, the improvement of such types of soils has been a matter of grave concern to the agricultural scientists. Various methods have been tried and applications of lime have proved beneficial in acidic soils while certain agro-chemical methods show promise of *usar* land reclamation. The biological aspect of the soil make-up may be treated under the biotic factor of the environment referred to above. Every soil is inhabited by a variety of bacterial flora and invertebrate fauna. Some of them are helpful to the plants e. g. the symboitic legume bacteria, various nitrifying bacteria, the earth-worms etc. while others, like the denitrifying bacteria, may be definitely harmful. For the better development of useful types of life the soil should be in a good physical as well as chemical condition. Poor drainage resulting in reduced aeration and unnecessary lowering of the temperature exerts a detrimental effect on the soil life. Pronounced conditions of acidity and alkalinity, likewise,

make the smooth-functioning of the bacterial life in the soil impossible. Thus the maintenance of the soil in a healthy state, as regards the physical and chemical factors, is a virtual necessity.

Of the three components of the physiographic factors of the environment topography is the most importont. It exerts a great influence on the local climate. It may serve to protect an area from excessive evaporation and may modify the temperature also. The general topography – the direction of the main mountain ranges with regard to the prevailing winds – is important from the standpoint of determining precipitation. Together with the geological strata, it (topography) helps in determining the natural drainage of a region. The altitude again is a factor more connected with the climate. The temperature tends to fall with the increase in the altitude. Thus the various physiographic factors appear to modify (a) the climate of a region through topography and the altitude and (b) the natural drainage of a region through the nature of the geological strata affecting, indirectly, the physical condition of the soil. The importance of both of these effects of the physiographic factors on the crops has already been stressed while discussing the climatic and edaphic factors above and hence a separate treatment, of these here, is not necessary.

From the foregoing discussion it will be evident that a crop in order to produce the maximum must firstly be raised from an approved strain noted for its performance and secondly, that the crop should be provided with the best conditions for its growth in the field right from the preparatory cultivation to the harvesting of the crop. Reduced to pure agronomical terms the following five points may be regarded as the key to maximum yield in crops:

Heredity:

(i) Suitable variety as judged by (a) high yield, (b) high viability of the seed, (c) resistance to pests and dieases and (d) desired quality characters.

Environment:

(ii) Sowing the variety at a proper time with an optimum seed rate.
(iii) Proper preparatory cultivation of the field and interculture.
(iv) Judicious manuring, and
(v) Timely irrigation.

Under any particular set of conditions of soil and climate, the correct information about the above mentioned five requisites of crop production will help cultivators to grow ideal crops. Information about one or two factors only-out of the five-will not solve the problem. A simultaneous approach should be made to ascertain all of them through well planned experiments and efforts must be made to work out what agronomists call a 'cultural schedule'. The working out of the cultural schedule for all the crops of a region will definitely result in a general rise in the standard of agriculture in that region. For the Agra region we have been able to establish certain aspects of the cultural schedule for wheat after experimentation for several years at our Research farm at Bichpuri. This tract has a semi-arid semi-tropical climate with an annual rainfall of about 25 inches mostly received during the rainy season months of July, August and September. The soil of the tract is mostly a light loam. The facts established are as follows:

(i) Pb. 591, a late variety, has proved to be the best variety of wheat giving an increase of 30 to 40 per cent in the yield over the 'local' variety.

(ii) A dose of 30 to 40 lb. of nitrogen per acre has proved to be the optimum. Potash and phosphate applications do not do any good to the wheat crop when applied singly but the latter when applied with nitrogen benefitted the crop. With increase in the dose of nitrogen, the dose of phosphorus could also be increased with advantage.

(iii) Wheat under Agra conditions needs 3 to 4 irrigations depending on the occurrence of winter rains. The quantity of water per acre per irrigation may vary from 60,000 to 90,000 gallons. Above this amount the yields of both grain and straw tend to fall. Increased fertility of the soil requires increased irrigation.

(iv) October 22nd to November 5th proves to be the best sowing period for wheat. Sowings earlier than this result in greater depression in yield than the latter ones.

(v) Thirty seers of seed per acre proves to be the optimum seed rate which could be increased to 40 and 50 seers under the conditions of deficient moisture in the soil.

The greatest need of the present Indian Agriculture is the knowledge of this type among the cultivators. Research activities should be further extended and their useful results should be passed on to the farmers. Till recently there has been a wide gulf between the State farms on the one hand and the cultivators on the other. Now with the initiation of the National Extension Service this aspect has been given its due importance. This is a move in the right direction. Further, the Governmet appear to be quite keen on extending the facilities of irrigation, good seed, and manure to the cultivators through the construction of new irrigation projects, establishment of new farms, and factories etc. The cumulative effect of all these efforts will result in greatly increasing the yields of our crops within few years. Better practices means better yields as is evident every year from the results of the crop competitions.

TOBACCO KELIN 49 (K. 49)

By: **H. M. DESAI**

Importance

OF the total production of about 556 million lbs. of tobacco in India in 1953-54 crop season, 146 million lbs. was grown in the Bombay State, 93 million lbs. in Gujarat and 74 million lbs. in the Kaira District. In the Kaira District CHAROTAR is an important tobacco growing area as the production of quality tobacco is mostly confined to this tract.

The CHAROTAR tract consist of Anand, Borsad, Petlad and the southern part of the Nadiad Taluka.

Recent Development

In the past, in the Kaira District, the tobacco was grown mostly as an irrigated crop. After the first world war, the cultivation of dry crop came into importance. After the introduction of the dry tobacco, the area under the tobacco crop in the district, increased to such an extent that its cultivation had to be controlled during war time in order to increase the production of the food crops. It may be pointed out here that the cultivation of the dry crop of tobacco is placing crores of rupees in pockets of the tobacco farmers of the district year after year since its introduction. The crop is also yielding an excise revenue to the Central Government. In short, this new introduction has been a boon and the man, who is responsible for this new introduction, deserves gratitude of the Kaira Farmers.

In any case the history of the introduction of this cultivation of the dry crop in the Kaira district is required to be written.

Environmental Factors.

Soil of the CHAROTAR area is indogangetic alluvium and texturally it can be

classed as sandy loam. The soil is immensely deep with no trace of rock below. The soil has about 8.5 p. H. and it is fairly rich. It, however, responds to nitrogen manuring.

The rainfall of the district is about 27 inches on an average and is confined to the monsoon months. It is very irregularly distributed. Mostly the late rains are deficient. With regular dressing of organic manures and under the protection of irrigation yield of the crop is fairly high.

In the CHAROTAR area, the wells when bored to a depth of about 125 to 150 ft. yield a good supply of water. Outside this CHAROTAR area water supply is uncertain. The famous tobacco wells in the district are situated in this CHAROTAR tract. Water of reputed well contain important food ingredients like potash nitrate. Lighter type of sandy soil is considered very suitable for tobacco cultivation as a dry crop. The very suitable distribution of rain for the tobacco cultivation is that in which there are good rains before planting the crop and lighter rains thereafter in the growing season. There should be no rains in the latter period when leaves are developing and maturing. These are considered ideal evironmental conditions for the tobacco growing as a dry crop in the Charotar area.

The various type of soil and variations in climate over a numbers of years are required to be studied in detail to establish some relationship between these and the performance of the tobacco crop.

Tobacco Quality

Before we discuss the cultivation aspect of the tobacco production, let us fully realise what constitutes tobacco quality. If we examine the market prices, we observe very great variations in these. The range, in price fluctuations from less than Rs. 10/- per maund of 40 lbs. to over Rs. 50/-, Rs. 70/- to Rs. 80/- for a maund, is not uncommon. The quantity of excellent grade, however, is limited. It is confined to some Mahi river bhattas and a few fields of repute.

On the whole it is estimated that about 25% of the produce is of good quality, 25% of fair quality and the remaining of inferior quality. *This however requires to be ascertained by proper survey and inquiry.*

Let us now consider what constitutes quality in tobacco.

It is the general opinion of growers and merchants, that, ingredients of the best quality are those in which there is a happy combination of both strength and sweetness supported by other leaf qualities. The price of tobacco varies in the proportionate availability of these qualities. The fixation of price, is however, an individual judgement of buyers and varies a great deal among them. Other ingredients of quality are thickness of leaves, well developed colour with sprangles (brown sprangles on yellow back-ground is generally prized) and keeping quality in the monsoon season.

What constitutes quality is for the present an individual opinion based on personal observations. *This is a fruitful line of research which is likely to yield rich dividend if some correlations are established which can be translated into cultural practices.*

Crop Management Practices

We will confine our discussion in this article to growing of tobacco, as a dry crop, for BIDI (Country cigarette) purpose and, how progressive farmers attempt to obtain best quality from their crop with material and means at their disposal.

Preparatory tillage operations start with a harrowing after the harvest of the previous crop. The routine of cultivation starts after the break of the monsoon season. Ordinarily 8 to 10 ploughings are given each followed by a plank harrow. Ploughing fields 15 times or over is not uncommon. Of recent, tractor ploughing by contract system is introduced. After the harvest of the previous crop, land is ploughed by a tractor to 6 inches depth and left in that condition. After rains, land is harrowed by a rack or a prong harrow cross-wise. Thus the land for tobacco planting is prepared by the use of a tractor plough.

According to the popular belief the ideal to be achieved in preparatory tillage is to prepare the seed-bed well to a depth of about 5 inches, having a granuler constituency as the sandy loam soil is ordinarily single grained with no granules.

Manuring :—When the preparatory tillage is in progress, farm yard manure at the rate of 15 to 20 cart loads per acre is added to fields which are already in good fertility status, or else, F. 4 m. at the rate of 30 cart loads per acre added. Sheep folding if available is also practised as it is considered a good source of organic matter for tobacco manuring.

To obtain sufficient quantity of organic matter for manuring tobacco fields is not possible. As a result, only well-to-do farmers purchase most of manure of the village. Accordingly, fields of ordinary and poor farmers are indifferently manured.

To make up for the deficiency of F. Y. M. or to economise in cost of manure, oil cakes are used to supplement the deficiency of F. Y. M.

The experience of the Anand Agricultural Institute is that, F. Y. M. can be completely replaced by oil cake manures. In that case the doze of oil cake is one ton per acre. This cake manure is given in powdered form at the time of the preparatory tillage. *The optimum dose, of organic manure alone or in combination of cake manures of the different types available, requires to be worked out and its effect both on soil structure and plant performance and on the quality of the produce, requires to be established.*

Raising of seedlings: This practice has developed into an art. There are farmers who raise seedlings for their own use and for sale. When there are shortages of seedlings the successful growers reap a rich harvest from the sale of seedlings.

Ordinarily, the area of seed-bed to the field area varies from about 1 : 40 to 1 : 80. There are however, great variations in this ratio. Area on a higher level is selected as the seed-bed area. This is manured by F. Y. M. at the rate of one cart load per Guntha area of the seed-bed and the land well prepared. Beds of convenient size are prepared. After the Monsoon sets in, seeds are broadcasted at the rate of one pound per one Guntha of the seed-bed area. Usually a little larger seed-bed is used and seeds are broad-casted twice.

Farmers prefer stout plants as seedlings. Accordingly, over manuring is avoided. In about four to six weeks time, seedlings reach planting stage. In the earlier stage of growth the seedlings are very delicate and with little mishap they are destroyed. Usual calamities are, either due to over saturation or wilting in patches big or small.

Transplanting is done after the period of heavy rainfall is over. According to the local practice latter half of August or early september is the best period. During this period cloudy weather with drizzling of rainfall or light showers predominate, which is considered ideal for transplanting.

Farmers in general want to take advantage of this weather whenever first occurs in the Megha nakshatra. It is a usual site to see people running about for seedlings at this time although each has planted his own seed-bed area. It only indicates that, there is usually dearth of seedlings at the earlier stage of the planting season.

If conditions for planting are not established in the period indicated above or missed and do not reoccur in time, wherever there are facilities, planting is undertaken on irrigation.

Planting in time is considered half the success in the raising of the tobacco crop. Late planting is usually gappy which results in uneven plant growth and uneven maturing. The variety, which is very popular in this area for growing as a dry crop, is a selection evolved by the Agricultural Department and is popularly known as K-49. This variety satisfies most of the characteristics desired in a dry crop and for the purpose for which it is used. To improve this variety still further, the selection is in progress and some of the promising strains are under trial.

After tilling, operations consist of inter-cultivation by hoes and hand weeding. These operations are given as and when required. Great care is taken to prepare soil mulch and to preserve it.

Topping and suckering operations are very essential in the growing of a tobacco crop. By these operations, plant growth is restricted to a definite number of leaves which are given full scope to develop as fully as the environment will allow. Usually 10 to 12 leaves are kept on a plant and the growing bud is topped. This restricts the further upward growth but stimulates the side growth. This is kept down by the operation known as suckering. These operations are very carefully attended upto the end.

Experienced farmers who are well versed in tobacco growing prefer very slow growth in the initial growing period. To get best results, they prefer the slow development of leaves in the cold weather.

Maturing takes about 4½ month's period, greenish yellow black-ground with spangles is the sign of matured leaves. Over maturing is avoided, as spangle spots get thin and thinner if leaves are allowed to remain on plants after maturity is attained. As leaves are matured, they are removed and kept for drying on the ground with veins down in order to avoid their rapid drying. On the third day the leaves are collected and taken home, thick veins are removed and the stuff is kept in a heap well protected. In the heap, leaves develop colour both of the leaf surface and sprangles thereon. If a leaf from the heap is taken, it presents fresh look with bright colouration.

A good well managed crop yields about 30 to 40 maunds (1 maund-40 pounds) per acre.

Rotation, in a tobacco field in this tract, is not in practice. Tobacco follows tobacco year after year. These tobacco fields require manuring with F. Y. M. year after year. It is the general belief that tobacco fields as they grow older offer difficulty in establishing seedlings in planting. Yields are reduced but both leaf quality and their keeping quality are improved. Only old tobacco fields which are very well managed year after year, develop the quality in which both strength and sweetness are happily blended. There are local beliefs, some of these are :

(1) With full dose of cake manuring colour improves, but keeping quality is lowered; tobacco grown only on cake manure gives sweetness but it has more strength.

(2) Farm yard manure improves quality of the produce along with its keeping quality.

(3) For growing best quality of tobacco with its keeping quality the tobacco should be grown without rotation.

These local beliefs should be tested scientifically and their truth ascertained.

Expenditure :—For growing an acre of tobacco Rs. 300/- to Rs. 350/- are required.

Rate of Rs. 40 to 56/- per maund of 40 lbs of high grade tobacco in the 1956 season is reported to be realised.

We are told on good authority that the best rate of a most renowned field in the past has been recorded even upto Rs. 150/- per maund of 40 lbs. Whatever may be the fact regarding the fancy price realised for a solitary field, it is obvious that there are very high variations in the tobacco price between the good quality and the average quality.

Conclusion

It would be clear from the discussion above that there is a need for a survey to find out what local practices are, on what factors they are based and what are the optimum value for all these.

It is also necessary to establish the truth of the traditional beliefs by appropriate researches and experiments. *Ideal in tobacco growing should be more production of quality on fewer acres in order to economise land and other resources.*

"SECOND FIVE YEAR PLAN-NUTRITIVE FOOD PRODUCTION"

By : **DR. R. N. GOVINDASWAMY**

IN the Second Five Year Plan have been drawn up schemes for the development of dairies, fisheries, and horticulture in order to correct the present unbalanced character of Indian diet–in which the charbohydrates predominate–by a large supply of supplementary and protective foods like milk, meat, eggs, fish, fruit and vegetables. Provision is also made in this plan for an outlay of Rs. 40 crores for animal husbandry and Rs. 22 crores for dairying.

The Editorial of the 'Mail' Madras of 13-1-56. 'says', "It is well to recall the objective which was laid down in Britain when the Agricultural Act of 1947 was passed, and which is very apt for application in India today, to increase a stable and efficient agricultural industry capable of producing such of the Nation's food as in the national interest it is desired to produce : and in producing it at minimum prices consistently with proper remuneration and living conditions for farmers and workers in agriculture, and an adequate return on capital investment in the industry. The increase required to improve the standards of diet in India will be achieved, if there is a long term policy, and the Government should make known as soon as possible just what is expected of the farmer, and what incentives he can expect. If these are provided the farmer will co-operate."

Importance of animal to man

Farm animals such as cattle, sheep, pigs and poultry fill an important place in man's scheme of life. Their function is to convert raw materials into more refined products which are of more direct use to man. They become practically indispensable to modern man's existence when these animals have converted the rough feeds that are of little use to man into meat, milk and wool. Meat and milk possess nutritive properties not available in plants. Therefore it becomes the function of sound animal husbandry to produce these varied animal products as economically as possible.

Livestock Industry

The livestock constitutes a large basic industry. It is said that for entire United States over 50% of the farmer's cash income is from the sale of live animals and animal products. Livestock and livestock products are said to be responsible for 80% to 90% of the farmer's cash income. This industry in India is in a rudimentary stage and no proper estimate of the income of the farmer from sale of livestock and livestock products can be made for want of statistics.

Production of Livestock Products

When breeding for a particular product, it is first necessary to know how that product is developed physiologically and how it is affected by environmental conditions. One can then see clearly the different characters that one wants to breed for, and the limitations which the environment set up on the full development of the genetic capabilities of the animal in this respect.

Heredity

When a sperm and an ovam fuse in the process of fertilization, a new life has been kindled. This single celled new being is at this stage known as *zygote*. This tiny cell possesses all the hereditary qualities that will develop in the new individual. With the formation of zygote by the union of a particular sperm and specific ovam, the hereditary die is cast and no genetic change thereafter is possible. The next change in heredity, if there be any, will occur when the zygote reproduces its own germcell on growing to maturity. The very essence of the genetic change that can be brought about in the livestock by a breeder lies then, in his choice of which ovam and what kind of sperm will have an opportunity to fuse together. This he does by choosing the parents that are to produce the next generation.

Environment

Growth is not only influenced by the hereditary determinors, although their control is of great magnitude. It is also the product of environment. *This interplay between heredity and environment is very important to the breeder.* It is easily possible to offset all of the good effect of desirable inheritance by poor care, improper feeding and unsatisfactory management. Environment is a general term, which includes all the conditions under which an animal is forced to live. This environment alone is responsible for all the increases or decreases in production that may be effected in animals now living. It should be clearly said here that such environmental factors as feed, climatic conditions, seasonal influences, management, health of animals, etc., are all significantly important in establishing the yield or level of production of livestock with different hereditary capacities. The best hereditary talents of production cannot, therefore, find expression without favourable environmental opportunity. Therefore production is a response; a reaction to their opportunity 'environment' conditioned by their potential "inherited ability".

Genetics in relation to breeding of farm animals.

Under natural conditions wild animals are at the mercy of environmental conditions and in most places have abundance at one time of the year and little at another. Consequently there is a regular variation in body weight at different times of the year. With the modern development of agriculture, however, conservation of food has made it possible to keep animals on a high plane of nutrition all the year round. Thus by control of the environmental conditions, it has been possible to breed and select for early maturity in our demestic animals, which would have been impossible to do under the natural conditions of intermittent food supply.

Breeding for early maturity is another form. This consists of reducing the size of the breed, so that maintenance demands of the animal for food are not so great and more is available for production.

Breeding for types of animals which will make full use of fodder supplies; this is what breed improvement for meat, milk or egg production really means. The difference between the improved and unimproved types is due to the way in which the nutritional substances are utilized by the body after absorption. An animal well bred for meat or milk therefore uses the feeding stuff given much more efficiently, a higher proportion of food intake being utilized for production and a lower proportion therefore required for maintenance.

Thus a breeder, while breeding for commerical purposes such as milk, meat or egg production, must have a definite objective and direct the improvement of his animals.

Work at Government level

Breeding requires a knowledge of genetics and the physiology of the reproduction to animal improvement. An Indian farmer, as he is today cannot take to breeding all to himself. *The Government must start research stations on genetics and praduce our own type of livestock, and supply to the farmers just as improved seeds are sold to the ryots.* In U. S. S. R., the Statefarm of Karavayevo raises a highly productive cattle of Kostroma breed for the collective farms and state farms of the country. The livestock breeders of the farm headed by S. I. Sheteiman began their work with unproductive animals of different breed and gradually created a pedigree stock of the new highly productive 'Kostroma' meat and dairy cattle which has become the best breed with a milk yield of 6,293 Kilograms per cow and an average weight of 663 Kilograms per cow. "We possess to every 100 hectares of ploughland, meadow and pasture, 30 head of cattle including 16 cows and get 926 centners of milk and 46 centners of meat. Our achievements are the result of the persistent application of new methods in practical livestock breeding that are based on the advanced ideas of Michurin Biology" ('Soviet Land' 15th Nov, 1954).

Cattle Problem

'Cattle population in India is too large for the food stuffs available. The best way to double milk production in India would be, first of all, to halve the population; thus giving each remaining cow, twice as

much food'. (Oxford Economic Atlas of the world. Page 48).

The following is the cattle census.

		1940	1951
1.	Cattle	1,37,929,000	155,099,000
2.	Sheep	41,506,000	38,829,000
3.	Pig	2,702,000	4,420,000

"The livestock population in India has shown an increase of slightly over 5% over the past five years, according to the eighth All-India Livestock Census conducted in March-April 1956. Cattle forms the largest proportion this year being about 159 millions." (The Mail of 30-7-56). It could be seen from the above that the cattle population has been on the increase year by year and exercise great pressure on the agricultural Economics. The views of Dr. Panjab Rao Deshmukh, Union Minister for Agriculture, on this issue as reported in the 'Indian Express' of 1-3-55 are of considerable interest. "If the cattle are not to compete with each other and with the people for the produce of the land, a sizeable portion of them must be eliminated. Despite our possessing more animals per head of human population than any other country in the world milk production is the lowest. Thus the problem is two fold. Firstly the number of cattle in the country is in excess of the ability of the land to support it. Secondly, the productivity of our cattle is so poor as to render them uneconomic. The two problems are linked, for, to quote the Royal Commission, no outstanding improvement in the way of breeding is possible till the cattle can be better fed and they cannot be better fed till their present number is reduced and future multiplication is controlled".

"It must, therefore, be admitted that Gosadans as a measure to eliminate old and useless cattle from the competition with milk and draught animals for the limited resources of cattle feed and fodder in the country have failed. Clearly, neither Gosandans or the Goshalas are a solution to the problem of old and useless cattle". I agree with the views of Dr. Punjab Rao Deshmukh and venture to suggest that the only solution to the problem is not to restrict free trade in beef, *because the monetary value of a useful head of cattle is anyday higher than that of its carcass.*

Work Plan

We have to overcome many handicaps, like 1) the dearth of productive livestock, 2) want of enough technical personnel like veterinary, dairying, Agriculture., and 3) want of proper food for the livestock. Therefore my suggestion would be to limit the area of operation. A suitable area of one each in Madras, Bombay, Delhi and Bengal, with an area of 20 or 30 miles may be selected. These areas may be called planned areas, which not only enable us to overcome the difficulties of shortages, but help in doing intensive work in the limited area.

These areas may be under strict controls. Livestock improvement act which prevents breeding from scrub bulls, has to be enforced. Breeding from scrub heifers has also to be prevented by an act of Parliament. The farmers of the area may be advised to sell away all their useless stock on the promise of replacing them with useful ones or the Government can purchase the worthless and sell them in the neighbourhood weekly markets. All the new animals that may come into the area may be placed under strict quarantine regulations.

The available poramboke lands (Government Waste lands) may be converted into pasture lands and fenced. Hay or silage may be made from the grass and kept in reserve for summer months. Supply of hay or silage to the areas may be maintained like that of military dairy farms. The farmers that have sufficient land holding may be induced to set apart a small portion of their land, from where they can raise their own fodder crops so that the cost of production may be low.

Having thus prepared the ground, the farmers in the area will be in a position to maintain useful animals. Until India can produce its own type of dairy cattle, the available Indian Dairy Cattle like Sahiwals (average yield of 6000 lbs.) and Sindhis (average yield of 3000 lbs.) may be supplied to the farmers through sale or loan or subsidy. These breeds can be expected to keep the farmers at a safe margin of profit. The farmers can also be supplied with hogs and poultry to diversify their farming. These farmers can be helped to organize themselves into producers' society and sell all their produce through their

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